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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,027	04/04/2001	Kanako Miyashita	NAK1-BO38	4851

7590
Joseph W. Price
PRICE AND GESS
2100 S.E. Main St.250
Irvine, CA 92614

09/12/2002

EXAMINER

LEON, EDWIN A

ART UNIT	PAPER NUMBER
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2833

DATE MAILED: 09/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,027

Applicant(s)

MIYASHITA ET AL.

Examiner

Edwin A. León

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/18/01, 8/21/01 and 4/4/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 27-37 is/are rejected.
- 7) ☒ Claim(s) 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-2, 4-6, 10-18, 21, 24, 27-32, 34 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Narayanan et al. (U.S. Patent No. 6,113,450).
With regard to Claim 1, Narayanan et al. discloses a method for producing a plasma display panel that has a front (201) substrate and a back (202) substrate disposed to face each other, the method comprising: a pre-baking phosphor layer (Steps 101-103, 160, 104-107, 120, 108, 191-195) forming step for forming a pre-baking phosphor layer (Steps 101-103, 160, 104-107, 120, 108, 191-195) containing a phosphor and an organic binder, on at least one of surfaces of the front (201) substrate and the back (202) substrate that are to face each other; a sealing material (204) applying step for applying a sealing material (204) that softens with heat, to the peripheral region of at least one of the surfaces of the front (201) and back (202) substrates that are to face

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each other; a stacking step (206) for disposing the front (201) and back (202) substrates to face each other in a stack; and a baking step (207) for heating the front (201) and back (202) substrates to burn out the organic binder while supplying a dry gas containing oxygen to an internal space that is formed between the front (201) and back (202) substrates. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 2, Narayanan et al. discloses the sealing material (204) being a glass frit that softens at a temperature lower than the highest temperature achieved in the baking step (207). See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 4, Narayanan et al. discloses a preliminary baking step (207) between the sealing material (204) applying step and the stacking step (206), wherein in the preliminary baking step (207), the glass frit is heated to a predetermined temperature to be preliminarily baked. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 5, Narayanan et al. discloses the sealing material (204) being a glass frit that being substantially composed of a crystalline glass. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 6, Narayanan et al. discloses the baking step (207), the heating is suspended for a predetermined time period after a temperature of the front

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(201) and back (202) substrates reaches to a predetermined temperature, then the heating is resumed to burn out the organic binder. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 10, Narayanan et al. discloses in the baking step (207), the front (201) and back (202) substrates being heated while being secured by pressure applied by a plurality of pressing units attached to the front (201) and back (202) substrates. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 11, Narayanan et al. discloses the plurality of pressing units applying pressure to the peripheral region of the front (201) and back (202) substrates. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 12, Narayanan et al. discloses the plurality of pressing units applying pressure to the front (201) and back (202) substrates inward of the sealing material (204), excluding the central region of the front (201) and back (202) substrates. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 13, Narayanan et al. discloses an exhausting step (208) for exhausting gases from the internal space, wherein the exhausting step (208) is started before the front (201) and back (202) substrates cool off to ambient temperature after

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the baking step (207). See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 14, Narayanan et al. discloses the exhausting step (208) being completed before the front (201) and back (202) substrates cool off to ambient temperature after the baking step (207). See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 15, Narayanan et al. discloses in the exhausting step (208), gases being exhausted while the internal space is maintained at a constant temperature. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 16, Narayanan et al. discloses a method for producing a plasma display panel that has a front (201) substrate and a back (202) substrate disposed to face each other, the method comprising: a pre-baking phosphor layer (Steps 101-103, 160, 104-107, 120, 108, 191-195) forming step for forming a pre-baking phosphor layer (Steps 101-103, 160, 104-107, 120, 108, 191-195) containing a phosphor and an organic binder, on at least one of surfaces of the front (201) substrate and the back (202) substrate that are to face each other; a sealing material (204) applying step for applying a sealing material (204) that softens with heat, to the peripheral region of one of the surfaces of the front (201) and back (202) substrates that are to face each other; a baking step (207) for burning out the organic binder by heating the front (201) and back (202) substrates separately disposed in a furnace; and a bonding step for

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disposing the front (201) and back (202) substrates to face each other and bonding the front (201) and back (202) substrates by keeping the front (201) and back (202) substrates being at a temperature higher than the softening point of the sealing material (204). See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 17, Narayanan et al. discloses in the bonding step, after the front (201) and back (202) substrates are disposed to face each other, a dry gas containing oxygen is supplied to an internal space formed between the front (201) and back (202) substrates. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 18, Narayanan et al. discloses the sealing material (204) being a glass frit. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 21, Narayanan et al. discloses in the baking step (207), the front (201) and back (202) substrates are heated in an atmosphere of a dry gas. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 22, Narayanan et al. discloses in the baking step (207), the front (201) and back (202) substrates being heated in an atmosphere of a circulated dry gas. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 23, Narayanan et al. discloses the dry gas used in the baking step (207) contains oxygen. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 24, Narayanan et al. discloses in the baking step (207), gases released from the front (201) and back (202) substrates as the substrates are heated are removed forcibly. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 27, Narayanan et al. discloses positioning markers are formed on surfaces of the front (201) and back (202) substrates before the baking step (207), and in the bonding step, the front (201) and back (202) substrates are positioned using the positioning markers so as to face each other. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 28, Narayanan et al. discloses an exhausting step (208) for exhausting gases from the internal space, wherein the exhausting step (208) is started before the front (201) and back (202) substrates cool off to ambient temperature after the bonding step. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 29, Narayanan et al. discloses the exhausting step (208) being completed before the front (201) and back (202) substrates cool off to ambient temperature after the baking step (207). See Figs. 1A-2 and Column 8, Lines 1-9 and

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Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 30, Narayanan et al. discloses in the exhausting step (208), gases are exhausted while the internal space is maintained at a constant temperature. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 31, Narayanan et al. discloses a plasma display panel production apparatus for use in the baking step (207) and the bonding step comprising: a heating furnace for housing and heating the front (201) and back (202) substrates disposed to face each other; and a dry gas supplying mechanism for supplying a dry gas to an internal space formed between the front (201) and back (202) substrates. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 32, Narayanan et al. discloses an exhausting mechanism (208) for exhausting gases from the internal space. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claims 34 and 37, Narayanan et al. discloses a plasma display panel produced by the method mentioned above. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

With regard to Claim 35, Narayanan et al. discloses an image display apparatus comprising: the plasma display panel and a driving circuit for driving the plasma display panel. See Figs. 1A-2 and Column 8, Lines 1-9 and Lines 35-67; Column 9, Line 57-67; Column 10, Lines 14-29; and Column 14, Lines 44-49.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 7-9, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayanan et al. (U.S. Patent No. 6,113,450). Narayanan et al. discloses the claimed invention except for the glass frit having a softening point of 400 IC or 3 higher, at least one of the front and back substrates having thickness of 2 mm or less, a flow rate of the dry gas supplied to the internal space being 1 CCM per 1 cm³ of the internal space, a flow rate of oxygen contained in the dry gas supplied to the internal space being 0.5 CCM per 1 cm³ of the internal space, the glass frit has a softening point of 400 C or higher, or in the bonding step, the front and back substrates being heated to a temperature in a range of 400 C to 520 C.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the glass frit having a softening point of 400 IC or

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higher, at least one of the front and back substrates having thickness of 2 mm or less, a flow rate of the dry gas supplied to the internal space being 1 CCM per 1 cm³ of the internal space, a flow rate of oxygen contained in the dry gas supplied to the internal space being 0.5 CCM per 1 cm³ of the internal space, the glass frit has a softening point of 400 C or higher, or in the bonding step, the front and back substrates being heated to a temperature in a range of 400 C to 520 C, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

5. Claims 33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayanan et al. (U.S. Patent No. 6,113,450) in view of Aoki et al. (U.S. Patent No. 6,369,501). Narayanan et al. discloses the claimed invention except for BaMgAl₁₀O₁₇:Eu being used as a phosphor constituting a blue phosphor layer.

Aoki et al. discloses BaMgAl₁₀O₁₇:Eu being used as a phosphor constituting a blue phosphor layer. See Column 10, Lines 26-29.

Thus, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the display of Narayanan et al. by including BaMgAl₁₀O₁₇:Eu being used as a phosphor constituting a blue phosphor layer as taught in Aoki et al. to improve the adsorption capabilities of the display.

Allowable Subject Matter

6. Claims 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The references fail to teach, disclose, or suggest, either alone or in combination, a disposing step and a separating step in succession between the sealing material applying step and the baking step, wherein in the disposing step, the front and back substrates are disposed to face each other, then in the separating step, the front and back substrates are relatively moved apart along a predetermined path, and in the bonding step, the front and back substrates are relatively moved together along the predetermined path so that the front and back substrates are disposed to face each other.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Murai et al. (U.S. Patent No. 5,754,003), Curtin et al. (U.S. Patent No. 5,672,083), Fahlen et al. (U.S. Patent No. 5,667,418), and Iwasaki et al. (U.S.

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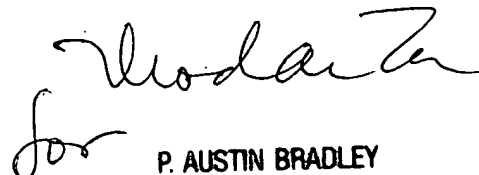
Patent No. 6,066,922) disclose plasma display panels having front and back substrates, sealing materials and pre-baked phosphors layers.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edwin A. León whose telephone number is (703) 308-6253. The examiner can normally be reached on Monday - Friday 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on (703) 308-2319. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Edwin A. Leon
AU 2833


P. AUSTIN BRADLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

EAL
August 21, 2002